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ABSTRACT

This paper examines how selected program characteristics and attributes of key players affected two school-university collaborative efforts, and how funded grants created the need for collaborative linkages between schools and universities with little or no prior experience in joint efforts. Two programs (an alternative certification program and a professional-development center) their joint planning processes, and the consequences of their joint actions are described. The alternative certification program was established to meet the perceived shortage of secondary mathematics and science teachers, and the professional-development center was created to provide teacher-preparation programs that are technology enhanced and field-based. Findings indicate that although formal structures may support cooperation, it is the individuals within organizations who make collaboration a success. The human characteristics of risk taking, commitment, tolerance for ambiguity, energy, and compassion contribute to the success of collaborative activities across institutions. Communication is the key. As trust builds through interactions and demonstrative actions, collaboration becomes a valuable byproduct of successful communication. One table and two figures are included. Contains 21 references. (LMI)

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Two School-University Collaborations:

Characteristics and Findings from Classroom Observations

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Two School-University Collaborations:

Characteristics and Findings from Classroom Observations

As public schools and universities strive to develop cooperative arrangements to satisfy state education codes or requirements for externally funded grants, institutional characteristics of these organizations often hinder collaboration. For example, Wu (1986a) notes several areas in which school-university differences often adversely affect collaboration on teacher preparation. These areas include research emphasis (solution oriented vs theoretically based), control (local vs state), policy making (autonomous vs consensus) responsiveness to community (sensitive vs relatively immune), institutional commitment (high vs low to moderate), and relative status (hierarchical vs diffused). Additional discussion of these and other inhibitors to collaboration between schools and universities is provided in Brookhart and Loadman (1989), Goodlad and Sirotnik (1988), Holmes Group (1990), Ladd (1969), Lieberman (1986), Mickelson, Kritek, Hedlund and Kaufman (1988), Osajima, (1989), Ward and Pascarelli (1987), and Wilbur (1984).

Wu (1986b) indicates that schools and universities can overcome these institutional differences to develop viable collaborative relations if mutual needs and benefits can be identified; if clear role expectations are stated for actors of both agencies, if a functional communication network can be established; if administrative structures and support can be established in both agencies, and if trust develops between actors in the two agencies. Support for these conditional statements can be found in the following sources: mutual needs and benefits (Collins, 1971; Dillon, 1974; Havelock, Huberman, & Levinson, 1981-82; Mickelson et al., 1988; Mocker, Martin, & Brown, 1988; Wilbur, 1984), clear role expectations (Brookhart & Loadman, 1989; Davis & Aquino, 1975; McGeoch & Quinn, 1975; Nur, 1983), acceptance of work conditions (Gallegos, 1980) functional communication network (Goodlad, 1987; Moore, 1968; Wilbur, 1984), administrative structures and support (Wangemann, Ingram, & Muse, 1989), trust (Ladd, 1969; Osajima, 1989).

This paper examines how selected program characteristics and attributes of key players affected two collaborative efforts, and how funded grants created the need for collaborative linkages between schools and universities with little or no prior experience in joint efforts. The joint planning processes associated with the programs are presented first, and then the consequences of joint actions. The final sections present attributes of key players and how they affected program implementation. An alternative certification program will be described first, and then a recently established professional development school will be described.

Alternative Certification Program

Joint Planning Processes

In 1985, an alternative certification program was established to meet the perceived shortage of secondary mathematics and science teachers. Among the required planning components was an advisory panel comprised of representatives from eight school districts and college faculty whose function was to provide advice and counsel on the program's development. School district representatives consisted of five curriculum directors, two secondary principals, a secondary teacher, and a director of personnel. University representatives consisted of eight faculty members from the departments of educational curriculum and instruction and educational administration. They included the dean, an assistant dean, the department head of curriculum and instruction, a departmental graduate advisor, director of field experiences and three faculty members whose teaching and advising responsibilities included baccalaureate students majoring in secondary education and secondary certification students majoring in liberal arts, science, or agriculture. Given their experience with secondary teacher preparation programs, the university faculty held a number of assumptions and views about the new program's philosophical basis, and the corresponding content structure of pedagogy for the program.

Content Structure: Philosophically, the orientation of the university faculty was for the new program to encompass the tenets of an academic rationalist curriculum (Vallance, 1985), which places substantial emphasis on the selection and ordering of content to be taught. Recent work has labeled this curricular orientation for teacher preparation as academic (Gore & Zeichner,

1991) or academic orientation (Feiman-Nemser, 1990), which emphasizes representation and translation of subject matter knowledge to promote student understanding.

As a result, the university panelists (especially the secondary level teacher educators) wanted to follow particular guidelines for selecting curriculum content. They believed that each concept, principle, or process considered for inclusion had to be: (a) related to student growth as revealed by empirical evidence; or (b) identified as necessary curricular material by expert opinion based on experience; or (c) logically explained by theory from social science and/or philosophy (Denton, 1987). Efforts in applying these curricular scope decision rules had resulted in a parts and kinds content taxonomy (See Figure 1) for the operating secondary teacher preparation programs at the time the advisory panel was formed.

Place figure 1 about here

Realizing that primary and secondary concepts could easily be expanded to include additional concepts, the secondary teacher educators on the panel believed that structure could serve as the content foundation for the new program.

Instructional Model: The second needed element in the university panelists' view for the new program was the content focused instructional model (Denton & Armstrong, 1989) illustrated in Figure 2.

Place figure 2 about here

Variants of this model (Armstrong, Denton, & Savage, 1978; Armstrong & Savage, 1983) had served as the organizational framework for the teacher preparation programs in secondary education for over a decade. This model provided a conceptual framework for teaching candidates as they learned how to develop and implement their instructional plans. In the model, candidates are asked to begin instructional planning by mapping relations of key content elements and

conducting concept analysis of those elements. Concept analysis involves defining selected concepts in terms of their critical and variable characteristics, then selecting example and non-example pairs that emphasize the critical characteristics of the concept. Next, the concept is illustrated through applications, such as problems or exercises (Klausmeier & Allen, 1978). This process enables candidates to develop substantial information about key concepts, and become thoroughly familiar with the formal-knowledge characteristics of the concepts they plan to teach.

Candidates then identify desired learning outcomes. This requires them to translate the formal knowledge elements into behavioral referents to be exhibited by their learners. Candidates must demonstrate mastery of the concept cited in the learning outcome. In addition, they make preliminary decisions about the level of cognitive processing (knowing, understanding, applying, analyzing) which they expect learners to exhibit. At this point in the process, candidates are encouraged to think of their outcomes as tentative. Outcomes may be altered as subsequent instructional decisions are considered.

Next, candidates develop instructional strategies. These strategies place substantial emphasis on learner guidance, learner performance, and feedback. At this time, candidates consider information they have compiled on key concepts through concept analysis and the nature of the desired learning outcomes as they select instructional activities. Once instructional activities are selected, they are sequenced into instructional strategies that incorporate Gagne's (1977) "events of instruction." The activities are sequenced to assure that the following instructional events occur: (a) attention of learner is obtained and maintained; (b) objective is communicated to learner; (c) prerequisite information is reviewed; (d) new information is presented with cuing and guidance offered as needed; (e) opportunities for learner performance are provided and followed by feedback; (f) assessment is made of need for additional information and performance-feeedback cycles. The complexity of instructional strategies (as evidenced by the number of instructional activities and the allocated time for students to master targeted outcomes) depends on the desired level of learner cognitive functioning for each learning outcome. As a rule, candidates organize a

greater number of instructional activities into a strategy as the expected level of cognitive functioning rises (Denton, Armstrong, & Savage, 1980).

This model encourages the candidate to accommodate entry level skills of individual learners by adjusting the planned instructional strategies if prerequisites are not evident. If learners do not have a firm grasp of concepts or principles considered to be the necessary prior knowledge-base for the intended learning outcome, the instructional strategy is modified. This modification enables learners to build on their existing levels of understanding.

During the implementation of instructional strategies, if learners fail to demonstrate satisfactory progress, the candidate adjusts the strategy and attempts another approach. In this model, evaluating instruction is considered to be a formative and iterative process. Candidates are encouraged to use criterion-referenced tests and assessment procedures. Data are gathered which allow them to assess learner progress as well as the effectiveness of the instructional system.

Public School Positions: Panelists representing public schools were from districts within a radial distance of 100 miles of campus. These districts were invited to participate in the development of the new program because of their past involvement with the college as student teaching sites. Given past associations and experiences with the secondary preparation programs from at least 5 years of student teaching placements, it was thought these districts would be interested in the program. However, personal associations among the public school panelists and between the public school and university panelists had been minimal prior to the formation of the panel.

The public school panelists came to the program development table with assumptions about teacher preparation, and they represented different districts and responsibilities (i.e., teacher, principal, personnel specialist, curriculum specialist) associated with secondary schools. However, they did share the view that the new program should develop teachers who would challenge current practices in schools and classrooms. These "new" teachers would encourage colleagues to examine and experiment with instructional practices, curricula, and technology.

These panelists did not believe that current practices necessarily needed to change, rather that they needed to be reviewed, discussed, and modified if found wanting by classroom professionals.

Finally, these panelists wanted teachers prepared with a sensitivity and sense of responsibility to the school and the profession. Goodlad (1990) captured this idea in the metaphor of the teacher as a gardener who is concerned not only with the growth of healthy plants but with the quality of the soil as well. Similarly, teachers must be concerned not only with the growth and development of learners, but assume responsibility for creating and maintaining a quality school.

Table 1 summarizes the expressed views of the panelists as they began to deliberate about the nature and structure of the new teacher preparation program. The school panelists held a practical orientation to teacher preparation programs that focuses attention on elements of craft and techniques of skilled teachers, while the university panelists held academic dispositions (Feiman-Nemser, 1990). However, these views were not in opposition to one another.

Place Table 1 about here

This panel met four times during the following year, with three meetings occurring prior to the beginning of instruction for the first cohort of teaching interns. During these meetings, a number of components were proposed that became integral characteristics of the program. These characteristics and how they were established are discussed in the following section.

Program Results: The alternative certification program was developed (October 1985-June 1986), implemented and maintained for 4 years (June 1986-August 1990). Although federal support ceased after 2 years, four cohorts of 31 interns participated in the program. Thirty interns completed certification requirements, 23 of whom also completed master's degrees in education. At this time, 22 former interns are continuing to teach in secondary or college settings and 3 have entered doctoral programs in professional education. Program evaluation results from the initial two cohorts reported elsewhere (Denton & Peters, 1990) indicate that students of interns had greater achievement on standardized curriculum based tests of earth science and physical science

but lower achievement in mathematics than students of more experienced colleagues who were teaching in the same departmental unit and school.

Two classroom observation systems were applied as the candidates moved into their classroom experience. The first is the *Texas Teacher Appraisal System-OR/ER*, the state's official observation, which is organized around five domains: Instructional Strategies, Classroom Management and Organization, Learning Environment, Presentation of Subject Matter, and Professional Growth and Responsibilities. Application of this instrument requires certified observers to judge whether the 65 performance indicators clustered under the five domains are evidenced during a teaching episode. This system was used for frequent informal appraisals or formative assessments by the university supervisor and mentor teacher during the fall semester to prepare the candidate for formal appraisals. A school administrator and teacher evaluator each conducted two formal appraisals of a teaching candidate using the system. The first was conducted in the fall (formative) and the second during the spring (summative).

OR/ER data was used to determine correlation between candidate performance in the course, *Methods and Theory of Teaching*, and their subsequent classroom performance. There were modest correlation values for six of the nine associations. Yet the three values that were statistically significant indicated an inverse relation between the candidate's pedagogical knowledge and subsequent classroom performance.

In addition, videotapes were made of three entire class sessions (fall, winter and spring) of each candidate, and subsequently coded and analyzed using *The Classroom Observation System* (COS). The COS was used to record observed actions and decisions made by a teacher during a lesson regarding classroom management, events-of-instruction, and instructional media. It was designed for large group (whole class) instruction which is directed and controlled by the teacher. See Tsai and Denton (1991) for additional information on the COS.

The COS was used to determine correlations linking candidate pedagogical knowledge and subsequent instructional skill through videotaped lessons obtained across the school year. Correlations did vary across fall, winter and spring observations. The following correlations were

observed: **stating objectives** (r's = -.14, .15, .32); **stimulus presentation** (r's = .16, .-18, .29); **cuing** (r's = -.18, .04, .22); **learner performance** (r's = .31, -.16, .27); and **feedback** (r's = -.23, .06, .19), revealing the relations across the school year. With the exception of **learner performance**, the trend of values across the observations indicate the desired teaching skill correlated more positively with course performance related to that skill as the year proceeded (Denton, Furtado, Wu & Shields, 1992).

Whether these data represent positive or negative findings about the program depends on the frame of reference of the reader. They do indicate the program was implemented and prospective teachers did become teachers who continue to teach in secondary mathematics and science classrooms.

Shared Program Decisions

Discussions and decisions reached by the program panel during the initial stages of the program resulted in the following program characteristics:

Paid Internship: At the initial meeting of the group, school panelists quite unexpectedly recommended including paid internships as an important component of the new program. One panelist, a school principal, reasoned that because the interns would be teaching in the school for an entire year, payment for their services was appropriate and necessary. This principal also noted that if an intern were to teach four periods in a 6-period day as a paid employee of the school district, the year of teaching experience would count as 1 year of teaching experience in the teacher retirement system. The panel discussed how this program characteristic would foster the development of partnerships between the school and university, because of shared program costs and the legal need for both partners to participate in the selection of interns for the program. Panelists also pointed out that salaries would make internships possible for individuals whose financial responsibilities would not allow them to work without pay. The panel strongly endorsed this recommendation, and it was accepted and integrated into the program.

The downside of this decision was the subsequent difficulty of recruiting districts to participate in the program and hire interns for a 1-year contract. Although real salary savings were

associated with the employment of each intern (intern's pay was one-half a beginning teacher's salary), placement of candidates in internships during the initial 2 years of the program was the greatest challenge in implementing the program. This difficulty occurred because mutual needs and benefits (Mickelson et al., 1988; Mocker et al., 1988; Wilbur, 1984; Wu, 1986b), which are necessary characteristics for shared organizational ownership, were not effectively addressed during program implementation. When approached and encouraged to participate in the program, representatives of school districts who did not participate on the development panel indicated they were not experiencing shortages of capable science and mathematics teaching applicants. These district representatives lacked a need to participate and felt no sense of ownership in the program. This suggests a strategic error in not inviting a larger number of school districts to participate in program development from the beginning. When program officials began approaching school districts who needed mathematics and science teachers and invited these districts to join the panel, an obvious benefit for participating was evident and joint ownership soon followed. Paid internships represented a change from past practices for professional field experiences and signaled the public school panelists' desire to create a program that challenged the status quo.

Staff Development Programs: A second recommendation initiated by public school panelists was that only school districts with well established staff development programs be invited to participate in the program. They believed this would ensure that support and assistance would be provided by the school district to the intern. The recommendation was accepted, and became an element in the program's implementation strategy. The positive consequence was the valued support and assistance provided to interns through orientation sessions for new faculty and their assigned mentor teachers. Because these induction practices were standard procedures in participating schools, no special program needed to be developed to ease or "orient" the intern into the district. This strategy met the condition of satisfying the role expectations for supervision of both agencies (Brookhart & Loadman, 1989; Davis & Aquino, 1975, Nur, 1983; Wu, 1986b), and the initial view of panelists to foster the organizational health of the school.

Unfortunately, the staff development requirement excluded small rural school districts which had critical needs for science and mathematics teachers because they lacked on-site staff development resources. This implementation strategy would have been modified if the advisory panel had had more diverse school district representation.

Academic Curriculum: A third recommendation was that the curriculum reflect a logical and organized content structure. Panel discussion of this recommendation centered around the emphasis in teacher education on establishing and documenting the content-structure. This recommendation was accepted, and became the foundation for the program's curriculum. Approval of an academic curriculum was influenced by the administrative structure and support (Wangemann et al., 1989) available to implement the curriculum.

A limitation of this decision was that content elements of historical and legal significance were not included in the program, given the emphasis placed on instructional skills and research skills needed by interns to conduct an instructional investigation during their internship. Again, this limitation could perhaps have been reduced had a larger number of school districts representing small rural and urban schools been represented on the panel.

Formal Agreements: A recommendation originating from university panelists was for district officials, preferably building principals, to approve at the beginning of each year the collection of classroom observation data and end-of-year measures needed for program evaluation. These agreements were essential for the program to meet the university's requirement of the Human Subjects Review Panel. Observation data included video-taped lessons recorded on each intern throughout the school year, while end-of-year measures included curriculum bound cognitive tests administered to learners of each intern and learner perceptions of the intern's instructional skills. Procedures for collecting these data were necessary to empirically test the content-focused instructional model. Unexpected, but highly valued, class sets of data were obtained when colleagues of the interns also administered the final course examinations to their classes and provided the data to the university supervisor. End of course achievement data from 771 learners were collected during cohort one.

One explanation for the success of obtaining these latter data is that the university supervisor established rapport with the interns and their mentor teachers through frequent and substantive interactions during the school year. The supervisor visited the interns weekly, and spent the entire day at the school observing, critiquing and visiting with the interns and fellow faculty members. The positions of Ladd (1969) and Osajima (1989) support the idea that the key to the success of interns and the support of the participating schools was the trust developed between the university supervisor and the interns. Similarly, it is thought that the reason colleagues of the interns agreed to administer the final course examinations to their learners and provide the resulting data to the university was the trust that developed between the teachers and the university supervisor during the year. These data gathering procedures were repeated with subsequent cohorts.

Permission to obtain class data was a major accomplishment. It was a significant departure from previous practices of districts who had seriously restricted the collection of classroom data by university faculty for research and evaluation purposes. Collaboration in this case opened classrooms for knowledge production about the preparation of teachers and thus satisfied the university's need for a theoretically based research emphasis. Much of the information collected was also used for formative assessment and problem resolution research focus. This complementary use of research data illustrates how both agencies accepted the conditions of work held by the other party (Gallegos, 1980; Wu, 1986b).

Alternative Certification Plan: To meet requirements for teacher certification, an alternative certification proposal was developed for individuals with degrees. This proposal was submitted to state certification officials and was approved for one year. In this plan, candidates were certified only if both the participating school district and the university recommended the individual for certification. Given the different governance structure for alternative certification, the state closely monitored this program and conducted an on-site evaluation of each intern. The evaluation team was satisfied the program was being conducted as proposed and approved the certification plan.

Thus, over the course of developing and implementing the program, the role of school districts evolved from providing advice about the preparation of teachers to providing financial resources (paid internships and mentor teachers), and becoming equal legal partners with the university in certifying secondary mathematics and science teachers. These events, while facilitated by changes in state regulations, came about because of the commitment and effort of individuals in these institutions to create an administrative structure and support system which was jointly "owned" by both school districts and the university.

Qualities of Effective Players

Cooperation is essential for any successfully organized social endeavor. Individuals agreeing to serve on the advisory panel readily accepted the charges of critically evaluating early drafts of the program and suggesting alternatives. Panel members representing school districts and college faculty began with the assumption that their views would be taken seriously and readily assumed the role of professional consultants. Respecting the views of all panelists and incorporating their recommendations into the program clearly enhanced the collaborative spirit. Yet personal characteristics of panelists, interns, and program implementers influenced the spirit of collaboration as well. Personal characteristics of participants who fostered school-university collaboration and enabled this program to succeed are highlighted in the following descriptions.

Risk Taking: The most effective individuals during the first year of the program were the risk takers. The interns were perhaps the greatest risk takers because the success of the program would directly affect their personal and professional lives well into the future. School principals, personnel directors, directors of secondary education and superintendents took risks in agreeing to work with interns, especially during the first year. They agreed without knowing whether students, parents, and the community would accept an intern as the teacher of record for the entire year. Additional unknowns were whether the interns had sufficient teaching skills to assume responsibility for four classes each day; whether they would develop and succeed at a sufficient rate to foster learning of their students; and whether fellow teachers and local teacher organizations would accept an intern in the role of full-time teacher. The success of interns during the first year

resolved questions about their ability to teach and reduced concerns about their acceptance by students, colleagues, and parents.

Commitment: A key to successful collaboration is identifying and recruiting the right people to be involved. These individuals are characterized by flexibility; willingness to fail and then try again, and enthusiasm combined with patience and commitment. For example, one principal with these characteristics contributed substantially to the program's continuation. By supervising two interns during the first year of the program, this principal encouraged others to participate in subsequent years. By the second year, the number of participating schools in that district increased from one to four.

Tolerance for Ambiguity: A number of school district decision-makers expressed concern that regulations associated with regular certification programs did not apply to this program. There were pragmatic concerns as well, such as the loss of flexibility (decision-power) by decision-makers in personnel issues involving their buildings, and an abundance of qualified applicants in mathematics and science. These ambiguities may have caused some decision-makers to decline to participate as the program moved into its second year, even though they were represented on the advisory panel and expected to participate. Of advisory panel representatives, only those districts participating in the first year agreed to participate during the second year.

On the positive side, one additional district was recruited through the efforts of a prospective intern who initiated contact with school personnel officers. She was unable to seek an internship with school districts that had participated during the first year because of family responsibilities and commuting distance. Her effort ultimately led the school district and university to file an alternative certification plan with the state teacher certification office. This prospective intern exhibited a high tolerance for ambiguity because negotiations between the district and university took several weeks. District administrators exhibited flexibility and conveyed an interest in the program due to personnel needs, leaving the university with the task of simply developing the written document to submit to the state department of education for program approval. The intern was very successful and received a special commendation from the district for the

outstanding performance of her students on state competency tests in mathematics. In addition, this district accepted two interns the following school year.

Energy: From the experience gained through operating this program, it appears that successful school-university collaboration requires a substantial amount of personal energy to flow into the system. Energy is required to establish protocols, keep communication channels open, monitor organizational climate and adjust to "rough weather", and maintain the social system once it is operational. In many respects, school-university collaboration has energy requirements similar to a gasoline engine. That is, energy need not come from a particular container, but it must always be present for the "engine" to operate.

Substantial investment of personal energy from different individuals is needed if school-university collaboration is to succeed. Further, once the energy threshold is attained, it must be maintained or the system will not operate. Fortunately, collaborative structures enable many individuals rather than a single individual to contribute to the energy demands of the system.

Other Qualities: Personal qualities of commitment to excellence and compassion, while evident across the program, were especially evident in a situation which occurred during the second year. One intern with excellent academic credentials and an expressed desire to become a teacher experienced serious difficulty with classroom management at the outset of the school year. Numerous classroom observations (9) followed by valuative feedback and recommendations from school officials (mentor teacher, assistant principal, principal) and university staff (university supervisor, principal investigator), failed to resolve the classroom management problems of the intern. The principal made accommodations such as dividing one class into two classes of 7 and 9 students, and adjusting another class to 17 students with a female to male ratio approaching 6:1. Unfortunately, these adjustments did not enable the intern to manage her classroom effectively and she was counseled to resign from the program, effective at the end of fall semester. School officials and university staff exhibited substantial industry, patience, and compassion as they worked with the intern to adjust and improve. They also held a professional commitment to

instructional excellence and reluctantly came to the conclusion that the intern be counseled out of the program for the sake of the young people in the intern's classes.

Professional Development Center

Background

In 1992, a center for professional development and technology was established in order to restructure teachers preparation programs that are technology enhanced and field-based. There are three primary objectives for the state funded professional development center to accomplish in 1992-93. The first is to obtain and implement evolving technology systems at eight school sites and two colleges of education. The second objective is to provide staff development regarding immediate instructional applications of these systems. The third objective is for curriculum development teams at each of these sites to develop teacher preparation experiences that accommodate the characteristics of learners at the school as well as incorporate technology into their instructional plans. These teacher preparation experiences will then be organized into restructured teacher preparation programs that are clinically based and technology enriched.

Shared Decision Making

Among the components required by the funding agency was that all phases of the program be collaboratively developed, with teachers comprising the largest single constituency group. Initial education partners were two universities, eight schools in five school districts, two regional education service centers and a community college. Corporate and parent partners were also involved in program planning and development. Discussions and decisions reached during the planning process of the professional development center resulted in the following characteristics:

Organization Structure: At the initial planning retreat to develop a shared vision for the center for professional development and technology, participants agreed that the professional development center be located at partner school sites. During subsequent planning meetings, it was agreed that the organizational structure would include school site councils which guide the operations at each school site, and a coordinating council to serve as the overall policy making

body to maintain coherence and integrity of the program. Participants agreed that program administration would be conducted from the large university which initiated the partnership. The coordinating council is comprised of representatives from each constituency group, including two teachers from each district. Teachers comprise 50 percent of the voting membership of the coordinating council. Each site council is comprised of a site coordinator, principal, two teachers, a parent , business representative, and educational service center representative (a university liaison serves in an ex-officio role). It was agreed that each site be allowed to develop its own special program features, including technology configuration, innovative instructional practices and field experiences.

The benefits of these decisions include increased ownership in the program at most school sites. The disadvantages are that many individuals are uncomfortable with ambiguity, changing roles, and shared decision making at the site level. Some sites are just not sure what they should be doing.

Staff Development: Professional development includes technology staff development, team building and group problem solving, and conference participation. A technology team from the university facilitates the acquisition and installation of technology equipment, and conducts staff development activitites with school and university faculty. Staff development includes work with individual teachers and site coordinators, as well as small group workshop sessions. Most teacher uses of the technology are utility oriented, but instructional applications are being designed which include integrating wordprocessing, spreadsheets, and hypertext into instruction. Teachers are learning to incorporate LCDs, laserdisks, CD-ROMS, and electronic mail into their instruction, and are being exposed to possibilities for multimedia presentations. The school and university sites are at different phases of technology staff development and implementation. It is anticipated that by summer 1993, the universities and five of the schools will have compressed video systems which will allow for live interactive video conferences among sites. Participation in educational technology conferences has helped teachers and administrators to share ideas and see some of possibilities for technology in instruction.

Feedback from staff development activities has been mixed. In order for technology to work in their classrooms, teacher needs have to be met. Through needs assessments conducted among teachers, Metcalf and Denton (1992) found that major challenges in planning technology staff development include allowing teachers ongoing time to learn new technologies, allowing for preferences and paces among teachers, and helping teachers see how technologies can enhance teaching and learning. Teachers who have these needs met seem to be putting technology to creative uses. For example, one sixth grade teacher with a computer station in her classroom has begun allowing her students to teach lessons using the computer and LCD display. She said, "I just stood in the back and they conducted their own class. It was fascinating. I was just there. I was truly a facilitator. . . And they were so disciplined, you could hear a pin drop, because everyone was so into what the person at the computer was doing, they didn't want to miss a beat. . . And I think the classes are just excited about not listening to me, and doing something else other than listening to me. . . I'm just looking for new ways for them to be able to learn."

Another teacher was frustrated by seeing some possibilities but not having her needs met. She said that staff development " . . . was geared more towards business and the manual, and not towards teaching and making it applicable to us. What we needed was how we're going to apply it to teaching. . . And I think even the creation stations are wonderful, if we're going to create exciting lessons, but that takes an awful lot of time. . . I would have to develop it, then I could roll it in here, or I could take my class . . . My ideas and my best teaching come from the moment. And if I could go and plug it into the computer, we'd have great units."

In order to facilitate team-building, trust, and group problem solving among school and university faculty and administrators, a series of three challenge activities were developed and conducted by the outdoor education program. The initial challenge session for team-building was held at an indoor conference center, and was well attended (approximately 65 people) by both school and university representatives. Level of participation dropped for the remaining sessions scheduled to be held at an outdoor ropes course, and was due partly to lack of time and the amount of physical exertion involved. It rained on the day of the first scheduled outdoor session, so it was

moved to an gymnasium, and had 14 participants, three of whom were from the university. A week later, approximately 25 people participated in the outdoor challenge session, about a third of whom were university faculty. Final full-day outdoor sessions were held a week apart in late March and early April. Each had a dozen participants, again about a third of whom were university representatives.

Preliminary feedback from those who participated in at least one of the outdoor challenge activities has been quite positive, even though the level of participation was disappointing. Participants said the teamwork broke down communication barriers among institutions, and promoted creative problem-solving. Some reported feeling a greater personal awareness, and realization that they could do more than they thought. For example, in the final session nearly everyone walked across a high wire and swung from tree to tree on a zip line. Some teachers suggested that outdoor challenge activities be a part of teacher preparation programs, and some reported doing team-building activities with their students and with colleagues. Some individuals have reported following up with contacts made at the sessions.

One teacher described the challenge experience, "And there were all levels there, you know from public school teachers-- elementary, high school-- and then university professors and administrators. So I feel like it was very successful, and we had a close bonding there. And then I felt like we needed to go more into what else we need to do with this. What's our next step? When I left there I felt like it had already been planned out and it was handed to me. There was no collaborating. There was no working at the end of the session after we had built the team . . . We had been handed something that had already been set up, developed and thought about. We had not created it. We had no ownership in it." Another teacher said, "Everything we have done has been necessary, even with the challenge course. Because I feel that it helped my relationship with university staff. It broke down a lot of barriers, and I feel very comfortable with Dr. B. . . I probably could ask her anything. And Dr. M. I have become closer to him. I don't know if I would ask him anything, but I'd ask him a lot more than I would have before."

On the other hand a university faculty member said that she doesn't have time for fun and games. She already trusts people, and doesn't need to fall into their arms to show that she trusts them. She said that trust isn't the problem, it's getting down to work and getting things done. Other university faculty said they did not participate after the first session because they just didn't have time.

Challenge activities involve physical exertion and much touching. Individuals who do not perceive themselves physically fit and/or who do not like touching may not be comfortable with the activities. Elementary teachers recognize that touching is an integral part of working with children. One teacher said, "We've had some student teachers that didn't like kids to come and hug them, and touch them. They need to be aware that elementary teachers are going to experience that. They just need to be aware of what children are like, and you can't find that experience in a classroom of adults."

The team-building activities will culminate in a one-day retreat to be held in late April to bring school and university faculty together to plan for restructured teacher preparation programs.

Formal Agreements: Two seven minute video productions have been developed from observations of classrooms and collaborative planning sessions. Following the second video production (in January 1993), it was recommended by a university representative that consent forms be obtained from teachers and parents to allow the collection of observation data for program evaluation and public relations. At a subsequent staff meeting of site coordinators and university liaisons it was agreed that schools would include statements of agreement with their packet of materials provided to parents in fall 1993. Consent forms have also been developed for individuals who participate in tape recorded interviews.

Evaluation Data: Evaluation data include videotapes of classroom observation, audiotapes of interviews with participants, notes from meetings, as well as questionnaires and surveys, and student achievement test scores. A technology implementation assessment instrument was developed to determine whether the program is meeting its first year strategic plan goals for technology implementation. The form was completed by school site coordinators in February

1993. The results show that all participating districts have prepared technology plans. Seven of eight school respondents reported that at least 10 hours of technology professional development activities have been provided for faculty, and administrators and staff access to technology workstations averages at least 2.7 hours per week. Six respondents reported faculty access to workstations averages at least two hours per week. This assessment instrument will be completed again at the end of spring semester 1993.

Regarding efforts to facilitate collaboration, classroom observations and interviews have found that this year some schools are incorporating more collaborative strategies through cooperative learning, small teaching and learning communities, and bringing together university students with elementary students. For example, one elementary school is piloting a multi-level grouping program this year which involves first, second, third and fourth grade students and teachers in a teaching-learning community which will stay together for at least two years. A third grade teacher described some experiences. "First and fourth graders work together on writing activities. First graders will tell the stories to the fourth graders who will transcribe. Right now we are in the process of studying plays . . . It's been kind of interesting because the first and second graders are less intimidated and will take the speaking parts, where the older students will choose non-speaking parts . . . the animals . . . or the clowns. . . Another exciting thing is the way that students interact with the other teachers. I know the first graders. They know me. I am another person they will come to. It's that kind of a family environment. It's a support system. . . In first grade they know who their third grade teacher is going to be. . . We're looking at after spring break doing some team-building. We felt like this is an area, since we are becoming a family unit, that we need to work through that, and make it more of a team effort. These kids need to learn how to get along. . . My vision is that we become more multi-level more of the time. That the walls really do come down between the grade levels, and the children really become more self-directed learners. We have experienced some of that, and it just takes time. . . We'll have to evaluate at the end to see if they're getting more. I feel like they're learning, and I think they're learning more than just classroom stuff. They're learning-- and they're working every day at

learning-- how to get along with other people. They're learning how to work with younger kids. It's becoming a natural thing with them."

The collaborative has facilitated additional partnership activities between a school district and university. For example, a representative from the National Society for Black Engineers recruited students from an engineering fraternity to come to the school once a week to tutor sixth graders in math. The math teacher said, "And I've talked to one of the persons involved, and she has told me that more [university] students want to come over . . . Our students really look forward to it. . . I've had one student that recently transferred to the district, and her grades were very low. . . She hadn't made many friends . . .She did very little work, and she's so quiet that she is easily overlooked. But being part of the group has really helped her. Her grades are up to high Bs."

Another example is a university psychology class which is taught on the school campus once a week, enabling students to apply what they have learned with elementary students. Each student is assigned an elementary student with extreme behavior or emotional problems. An elementary teacher described it. "And the university student is basically a mentor, and is also applying whatever theory or method is being taught at the university to the [elementary] student . . . They meet in the cafeteria for an hour . . . I believe that this will be beneficial to both parties. The university student will be able to make major career decisions, I believe, through this experience and learn more about the at-risk student. And the [elementary] student will get more individual attention, and be able to maybe have a better self-concept."

The teacher described a mentoring program that had begun two years ago at another school, and has expanded to her school during the current year. She said that the university students from several disciplines-- engineering, business, nursing, education-- volunteer to spend an hour a week with an elementary student. She said, "They see the importance and maybe it was something they didn't get in their earlier years. And they come over and do planned and unplanned activities with the students." She said that teachers and university faculty are going to be doing some joint research, and developing a way to evaluate the mentoring program.

Another partnership she described is a dance program in which fifth and sixth grade students receive free dancing lessons at the university dance studio. A faculty member and university student volunteers work with the elementary students one afternoon a week. The school district provides bus service for the students. The dean of education is using program funds to support the faculty member to attend a conference in return for her involvement.

Two teachers described how they see their roles evolving in the professional development center. The sixth grade teacher said, "Well, I just feel that I will become definitely more knowledgeable about technology, and my ultimate goal is to be able to model what the [program] objectives are about, and that will be my role. I will be able to be just a true facilitator. I will get away from . . . well, I really don't use a textbook anyway. They're just a reference. . . We use our ideas. The students have input in social studies, in the planning of what they want to do. . . So I listen to them in my planning. One of my students wants to do a play, so my student teacher is doing a play which relates to decision making and realizing the importance of their decisions. So I want to be the person that just oversees what the students are teaching each other."

The third grade teacher said she would like to be a teacher and facilitator, and "help teaching candidates work through situations that they encounter with students. I want to do a lot of dialogue with them. They can come in and observe me, but when they have to do it then it becomes a different game. So it has to be a process where they're doing, because we learn so much by doing. We can't just read about it, we can't just see it happen, we have to do it and that's when it becomes real . . . That's what we're doing is we're teaching them to be teachers, so that have to do. . . the multilevels, the nurturing environment . . . the teaching has to be very flexible."

Conclusions

While formal structures such as advisory panels and institutions may support cooperation, it is the individuals within the organizations that make collaboration a success. The human characteristics of risk taking, commitment, tolerance for ambiguity, energy, and compassion contribute to the success of collaborative activities across institutions. The "secret to successful collaboration," however, is communication. Individuals communicating frequently and honestly

with one another build mutual trust and respect, shared ownership, and willingness to work. Most of the conditional "if" statements (Wu, 1986b) noted at the outset of this paper were achieved through clear communications and hard work of individual partners. Stated another way, as trust builds through interactions and demonstrative actions, collaboration becomes a valuable by-product of successful communication.

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Table 1: Initial Views of Public School and University Panelists Regarding New Teacher Preparation Program

Public School Panelists	University Panelists
1. Program will prepare teachers to challenge status quo in schools.	1. Program will be based on a carefully developed content structure of pedagogy reflecting the academic tradition.
2. Program will instill in teaching candidates a sense of responsibility for the school's organizational health.	2. Program will emphasize the content-focused instructional model.

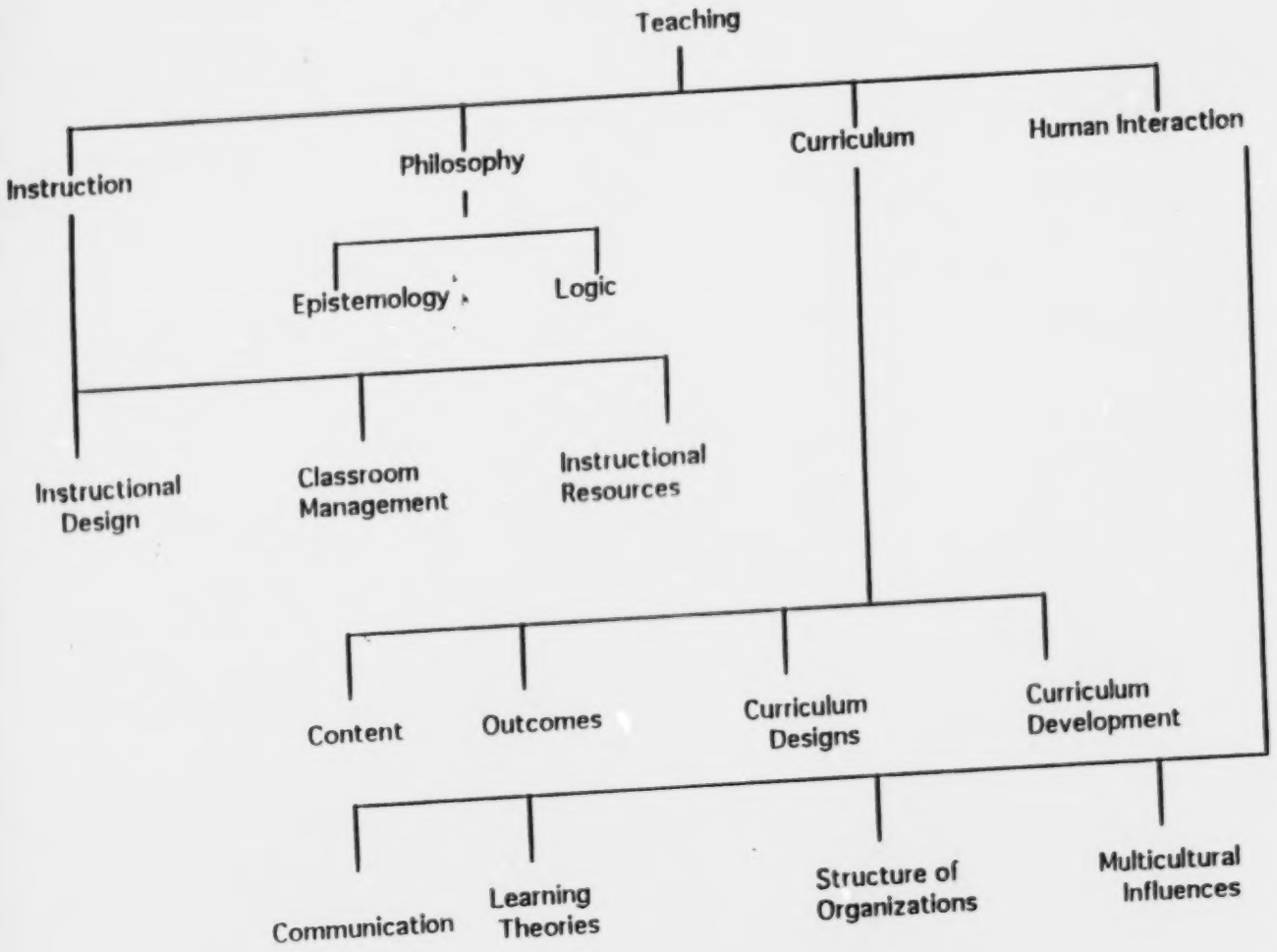

Figure 1

CONTENT MAP FOR ALTERNATIVE CERTIFICATION PROGRAM

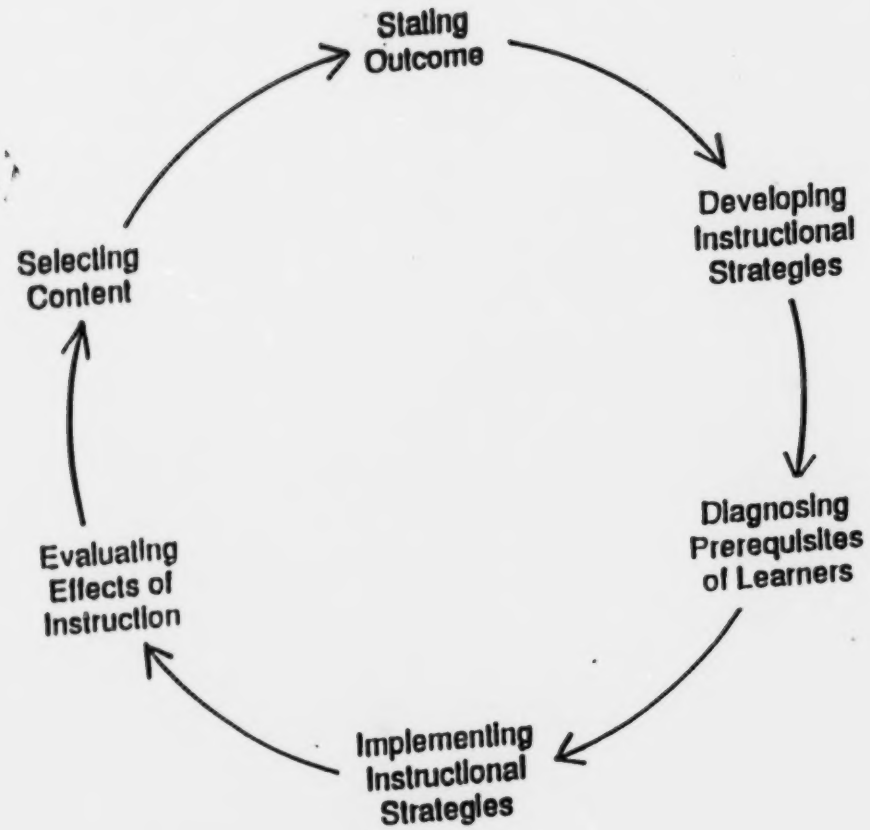

Figure 2

Content Focused Instructional Model